hp StorageWorks
Universal Port Module Kit

These installation instructions provide procedures for setting up, configuring, and managing a UPM kit in a StorageWorks Director 2/64 or a Director 2/140.

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About This Guide

These installation instructions provides information to help you:

- Install the UPM kit.
- Test the UPM kit for proper operation.
- Contact technical support for additional assistance.

"About this Guide" topics include:

Overview

This section covers the following topics:

- Intended Audience
- Related Documentation

Intended Audience

This book is intended for use by owners of the HP StorageWorks Director 2/64 or the Director 2/140.

Related Documentation

For a list of corresponding documentation included with this product, see the Related Documents section of the *HP StorageWorks Director Release Notes*.

For the latest information, documentation, and firmware releases, please visit the HP StorageWorks web site:

http://h18006.www1.hp.com/storage/saninfrastructure.html

- For information about Fibre Channel standards, visit the Fibre Channel Industry Association web site, located at http://www.fibrechannel.org.

Conventions

Conventions consist of the following:

- Document Conventions
- Text Symbols
- Equipment Symbols

Document Conventions

This document follows the conventions in Table 1.

Table 1: Document conventions

Convention	Element
Blue text: Figure 1	Cross-reference links
Bold	Menu items, buttons, and key, tab, and box names
Italics	Text emphasis and document titles in body text
Monospace font	User input, commands, code, file and directory names, and system responses (output and messages)
Monospace, italic font	Command-line and code variables
Blue underlined sans serif font text (http://www.hp.com)	Web site addresses

Text Symbols

The following symbols may be found in the text of this guide. They have the following meanings:

⚠ **WARNING:** Text set off in this manner indicates that failure to follow directions in the warning could result in bodily harm or death.

△ **Caution:** Text set off in this manner indicates that failure to follow directions could result in damage to equipment or data.

Tip: Text in a tip provides additional help to readers by providing nonessential or optional techniques, procedures, or shortcuts.

Note: Text set off in this manner presents commentary, sidelights, or interesting points of information.

Equipment Symbols

The following equipment symbols may be found on hardware for which this guide pertains. They have the following meanings:

Any enclosed surface or area of the equipment marked with these symbols indicates the presence of electrical shock hazards. Enclosed area contains no operator serviceable parts.

WARNING: To reduce the risk of personal injury from electrical shock hazards, do not open this enclosure.

Any RJ-45 receptacle marked with these symbols indicates a network interface connection.

WARNING: To reduce the risk of electrical shock, fire, or damage to the equipment, do not plug telephone or telecommunications connectors into this receptacle.

Any surface or area of the equipment marked with these symbols indicates the presence of a hot surface or hot component. Contact with this surface could result in injury.

WARNING: To reduce the risk of personal injury from a hot component, allow the surface to cool before touching.
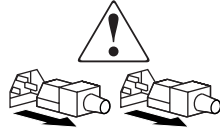
Power supplies or systems marked with these symbols indicate the presence of multiple sources of power.

WARNING: To reduce the risk of personal injury from electrical shock, remove all power cords to completely disconnect power from the power supplies and systems.

Any product or assembly marked with these symbols indicates that the component exceeds the recommended weight for one individual to handle safely.

WARNING: To reduce the risk of personal injury or damage to the equipment, observe local occupational health and safety requirements and guidelines for manually handling material.

Rack Stability

Rack stability protects personnel and equipment.

⚠ **WARNING:** To reduce the risk of personal injury or damage to the equipment, be sure that:
- The leveling jacks are extended to the floor.
- The full weight of the rack rests on the leveling jacks.
- In single rack installations, the stabilizing feet are attached to the rack.
- In multiple rack installations, the racks are coupled.
- Only one rack component is extended at any time. A rack may become unstable if more than one rack component is extended for any reason.

Getting Help

If you still have a question after reading this guide, contact an HP authorized service provider or access our web site: http://www.hp.com.

HP Technical Support

Telephone numbers for worldwide technical support are listed on the following HP web site: http://www.hp.com/support/. From this web site, select the country of origin.

Note: For continuous quality improvement, calls may be recorded or monitored.

Be sure to have the following information available before calling:

■ Technical support registration number (if applicable)

■ Product serial numbers

■ Product model names and numbers

■ Applicable error messages

■ Operating system type and revision level

■ Detailed, specific questions

HP Storage Web Site

The HP web site has the latest information on this product, as well as the latest drivers. Access storage at: http://www.hp.com/country/us/eng/prodserv/storage.html. From this web site, select the appropriate product or solution.

HP Authorized Reseller

For the name of your nearest HP authorized reseller:

■ In the United States, call 1-800-345-1518

■ In Canada, call 1-800-263-5868

■ Elsewhere, see the HP web site for locations and telephone numbers: http://www.hp.com.

Installation Instructions

1

This chapter describes the procedures used for installing a Universal Port Module (UPM) kit into a Director 2/64 or a Director 2/140. This chapter contains the following information:

■   Supported Kits

■   Installing the UPM

Supported Kits

HP sells the StorageWorks Director 2/64 with a base configuration of 32 Fibre Channel ports and the StorageWorks Director 2/140 with a base configuration of 64 Fibre Channel ports. HP also sells optional kits to increase the number of ports to a maximum of 64 for the Director 2/64 and a maximum of 140 for the Director 2/140. Use the procedures described in this chapter for the following director UPM kits:

■ 8-Port UPM Kit, 300833-B21 (A6574B)

— (2) Short-wave-4-Port cards, includes (8) short-wave 2 Gbps SFP optical transceivers

— (1) Loop back plug (multi-mode/short wave)

— (1) Port card installation instructions

— (1) Warranty

■ 4-Port UPM Kit, 316094-B21

— (1) Short-wave-4-Port card, includes (4) short-wave 2 Gbps SFP optical transceivers

— (1) Loop back plug (multi-mode/short wave)

— (1) Port card installation instructions

— (1) Warranty

Installing the UPM

This section describes procedures to install one UPM card, even though you can install more than one UPM card at the same time. If you are installing more than one UPM card, ensure that the procedure steps are applied to all UPM cards being installed. In addition, this section provides procedural notes and ESD information.

Procedural Notes

The following procedural notes are referenced as applicable. The notes do not necessarily apply to all procedures in the chapter.

■ When performing procedures described in this chapter, follow all electrostatic discharge (ESD) procedures, **WARNING** and **CAUTION** statements, and statements listed in the preface of this manual.

■ After completing the steps of a detailed procedure that is referenced from another procedure, return to the initial (referencing) procedure and continue to the next step of that procedure.

ESD Information

When performing procedures described in this section, follow all ESD procedures, **WARNING** statements, and **CAUTION** statements. When installing UPMs, always connect a grounding cable to the director chassis and wear an ESD wrist strap.

> **Caution:** To avoid causing machine errors or damage while working on the director, follow ESD procedures by connecting a grounding cable to the director chassis and wearing an ESD wrist strap.

The ESD grounding point for the front of the Director 2/64 chassis is located at the bottom center, adjacent to the left power supply, as shown in Figure 1. The ESD grounding points for the front of the Director 2/140 chassis are located at the right and left sides of the chassis, as shown in Figure 2.

Touch the chassis once before performing any maintenance action, and once each minute while installing UPMs. If the director is not connected to facility power (and therefore not grounded), connect the ESD wrist strap to an approved bench grounding point instead of the chassis.

> **Note:** Figure 1 shows a cable management assembly for the Director 2/64 that is only used with the 9000, 10000, and 11000 Series cabinets.

> **Note:** For the Director 2/64, rotate the cable management assembly, if used, to reach the grounding point. The assembly locks into the raised position. Any cables attached to the Director 2/64 are then held up, allowing access to the lower front of the chassis. If no cables are attached to the director, the assembly may be removed.

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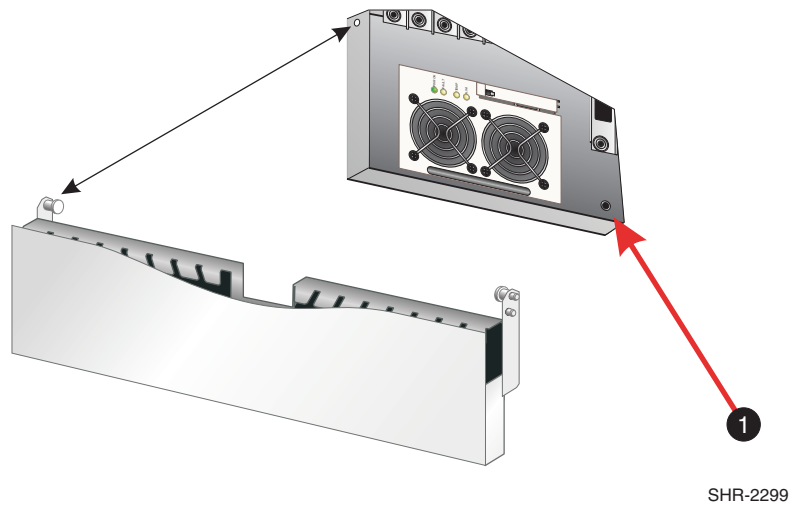
❶   Director 2/64 ESD Grounding Point

Figure 1: Director 2/64 ESD grounding point (front)
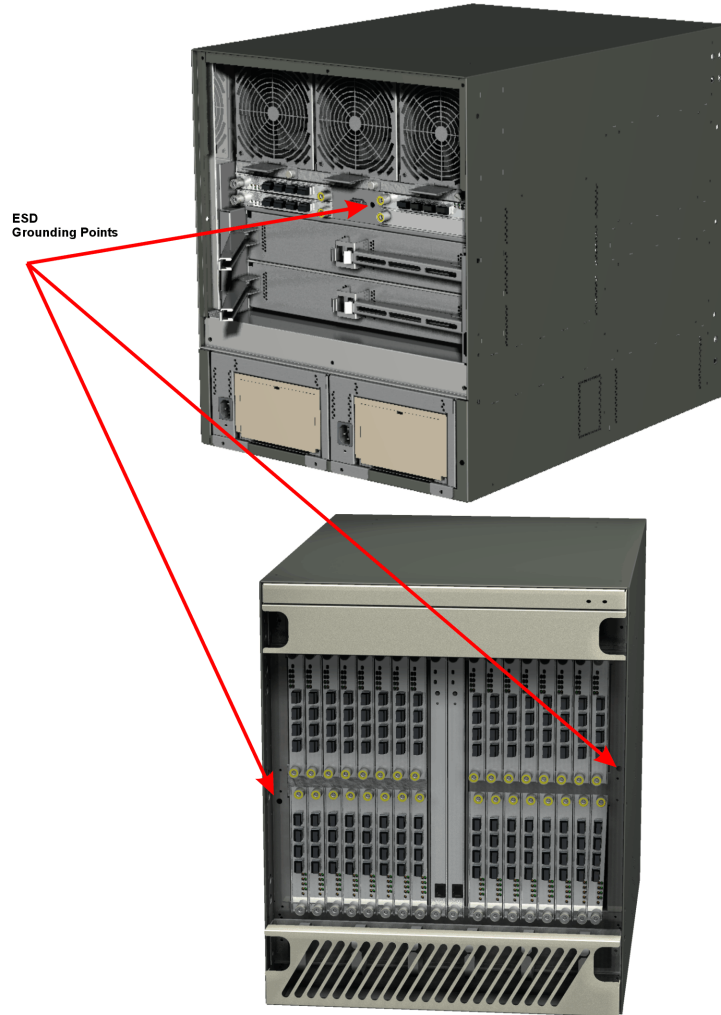
Figure 2: Director 2/140 ESD grounding points

The ESD grounding point for the rear of the Director 2/140 chassis is located next to the maintenance port, as shown in Figure 2. The ESD grounding point for the rear of the Director 2/64 chassis is located at the bottom center, directly below the maintenance port, as shown in Figure 3.

Touch the chassis once before performing any maintenance action, and once each minute while installing UPMs.
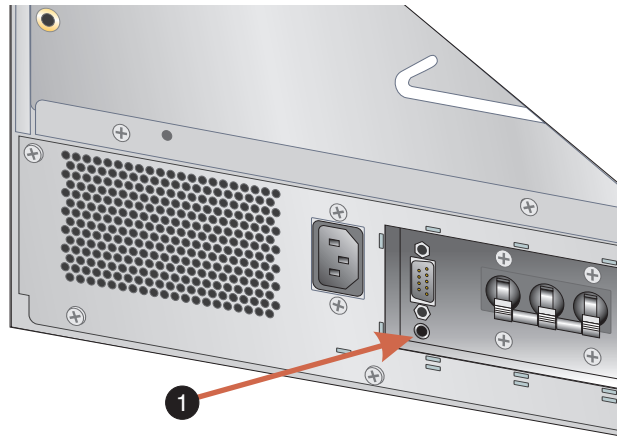
❶ ESD Grounding Point

Figure 3: ESD grounding point (rear)

Removing the UPM Filler Blank

Use the following procedure to remove a UPM filler blank. Filler blanks cover and protect unused UPM card slots in the director chassis. A list of required tools is provided.

Required Tools

The torque tool and hex adapter (provided with the director) are required to perform the installation procedures.

Removal

To remove a filler blank:

1. Unlock and open the cabinet front door if the director is rack-mounted and installed in a custom equipment cabinet. If the director is installed in a stand-alone configuration, go to .

2. Identify the filler blank to be removed.

The filler blank is secured to the director chassis with two captive Allen screws. Both screws are spring-loaded to lock the filler blank in place.

3. Insert the torque tool into each locking Allen screw, as shown in Figure 4 for the Director 2/64 and Figure 5 for the Director 2/140. Turn each screw counter-clockwise until the spring releases and the tool turns freely.

❶ UPM Filler Blank   ❷ Torque Tool
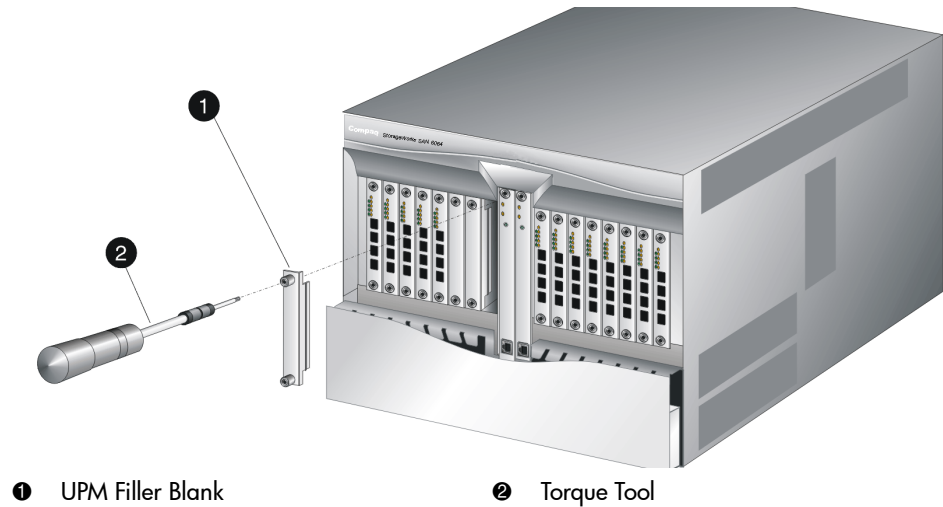
Figure 4: Director 2/64 UPM filler blank removal
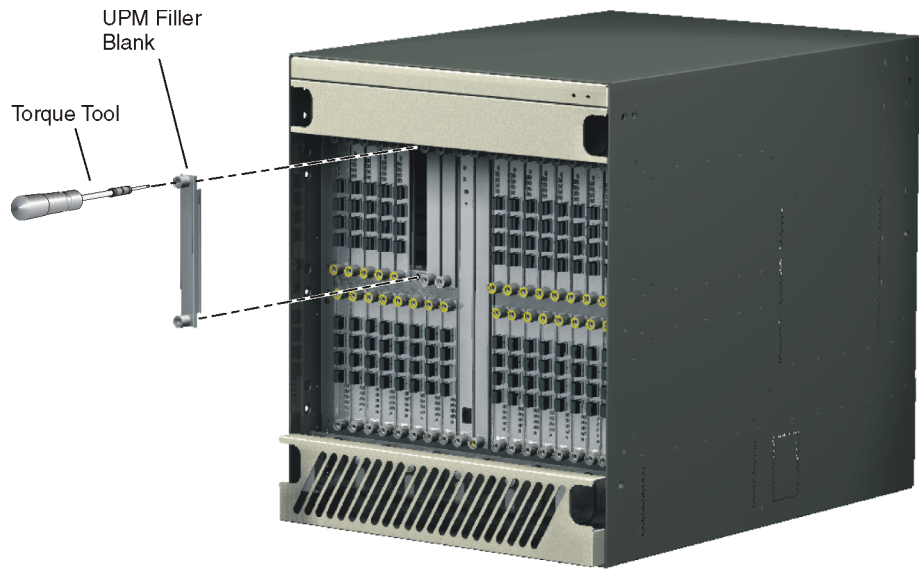
Figure 5: Director 2/140 UPM filler blank removal

4. Pull the filler blank out and remove it from the director chassis.

Installing the UPM Card

Use the following procedures to install a UPM card. A list of required tools is provided.

Required Tools

The following tools are required to perform these procedures.

- ESD grounding cable and wrist strap.
- Torque tool and hex adapter (provided with the director).
- Fiber optic protective plugs (provided with the director).

Installation

1. Follow ESD procedures by attaching a wrist strap to the director chassis.

> ⚠ **Caution:** To avoid causing machine errors or damage while working on the director, follow ESD procedures by connecting a grounding cable to the director chassis and wearing an ESD wrist strap.

> ⚠ **Caution:** Ensure that protective plugs are inserted into the UPM card optical transceiver receptacles. This prevents damage to sensitive components and prevents injury to the eye if the laser is viewed directly.
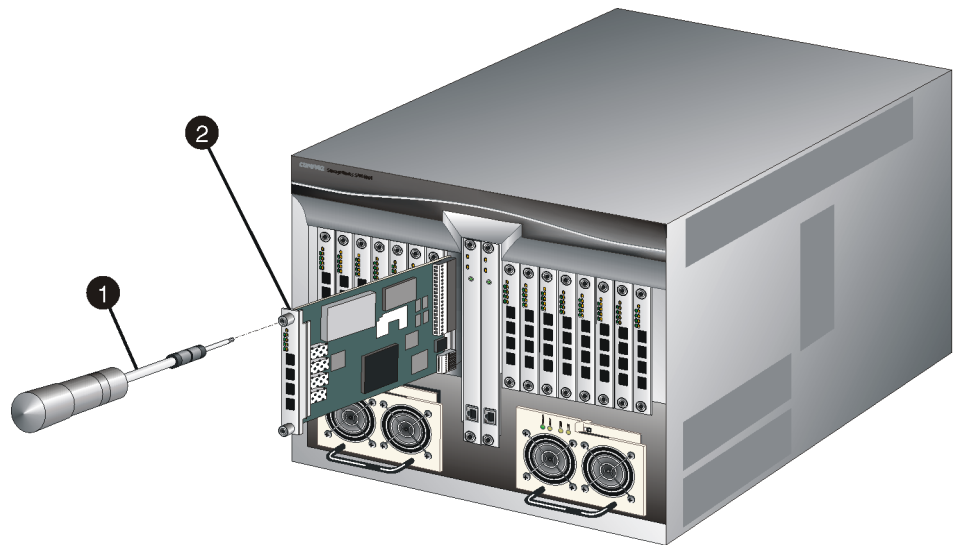
SHR-2302

❶ Torque Tool   ❷ UPM Card

Figure 6: Director 2/64 UPM card installation
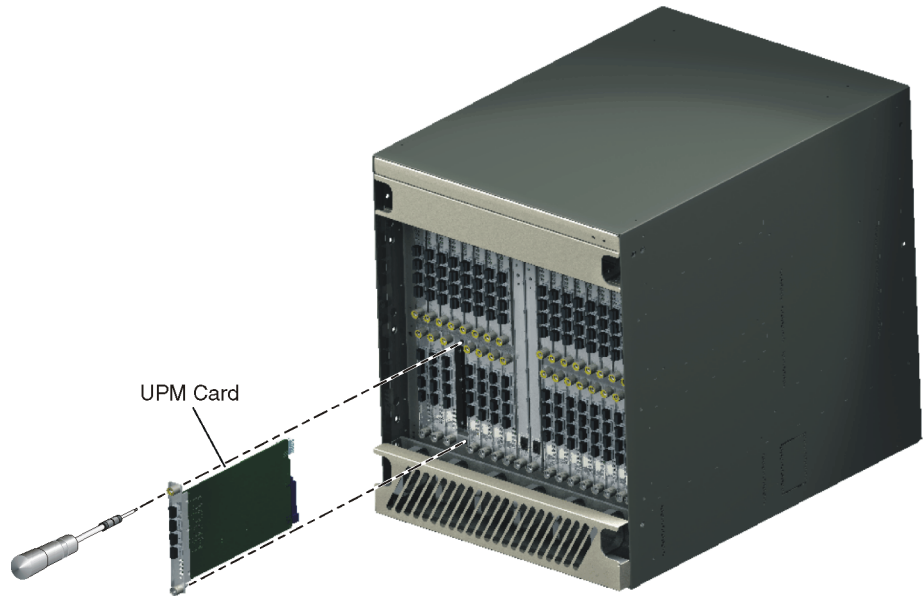
Figure 7: Director 2/140 UPM card installation

2. Remove the UPM card from its protective anti-static bag.

3. Hold the card by its stiffener and insert it in the chassis card track, as shown in Figure 6 for the Director 2/64 and Figure 7 for the Director 2/140. The yellow locking Allen screw should be at the bottom for the Director 2/64, and it should align with the yellow "lock" symbols on the frame for the Director 2/140. Verify the card is aligned in the card tracks, then slide it forward until it makes contact with the backplane.

4. Secure the UPM card as follows:

> ⚠️ **Caution:** The torque tool supplied with the director is designed to tighten logic cards and is set to release at a torque value of six inch-pounds. Do not use an Allen wrench or torque tool designed for use with another HP or Compaq product. Use of the wrong tool may overtighten and damage logic cards.

    a. Insert the torque tool into the cam Allen screw (uncolored). Turn the torque tool clockwise until you feel it release and hear a clicking sound. As the screw turns clockwise, the card cams into the backplane connector.

    b. Insert the torque tool into the locking Allen screw (yellow). Turn the torque tool clockwise until you feel it release and hear a clicking sound. As the screw turns clockwise, the card locks into place.

    c. Verify the card stiffener is flush with the front of the card cage and even with other director logic cards.

5. Perform an external loopback test for all ports on the replacement UPM card. For instructions, refer to "External Loopback Test" on page 24 and return here. If the test fails, see the Maintenance Analysis Procedures (MAP) in the Diagnostics chapter of the *HP StorageWorks Director 2/64 Service Manual* or *HP StorageWorks Director 2/140 Service Manual* to isolate the problem.

6. Disconnect the ESD wrist strap from the director chassis and your wrist.

7. Inspect the UPM card to ensure all amber LEDs are extinguished. If any amber LEDs are illuminated, go to MAP 0000: Start MAP of the *HP StorageWorks Director 2/64 Service Manual* or *HP StorageWorks Director 2/140 Service Manual* to isolate the problem.

8. At the **HA-Fabric Manager** server, open the *HA-Fabric Manager* application. The **Product View** displays.

9. Double-click the icon representing the director for which the loopback test will be performed. The **Hardware View** for the selected director displays.

10. Choose **Event Log** from the **Logs** menu. The **Event Log** displays. Ensure the following event codes display in the log:

    — **500** - UPM card hot-insertion initiated.

    — **501** - UPM card hot-insertion completed.

If an event code **501** does not display in the log, go to MAP 0000: Start MAP of the *HP StorageWorks Director 2/64 Service Manual* or *HP StorageWorks Director 2/140 Service Manual* to isolate the problem.

11. At the **Hardware View**, double-click the graphic representing the replacement card to open the **Port Card View**. At the **Port Card View**:

    a. Ensure no alert symbols display that indicate a failure (yellow triangle or red diamond).

    b. Verify UPM card information (FRU name, position, and state) is correct.

    If a problem is indicated, go to MAP 0000: Start MAP of the *HP StorageWorks Director 2/64 Service Manual* or *HP StorageWorks Director 2/140 Service Manual* to isolate the problem.

12. Close and lock the equipment cabinet door.

13. Initiate communication to the UPM card and set the card online as needed. For instructions, refer to "Unblocking a UPM Card" on page 27.

Miscellaneous Procedures

The following are miscellaneous procedures that you can perform on your UPM card.

External Loopback Test

To perform an external loopback test for a single port or a UPM card (four ports):

1. If the UPM card is currently being used in a fabric, then notify storage users on the fabric that a disruptive external loopback test will be performed on a port or UPM card, and the fiber optic cable or cables will be disconnected. Ensure the system administrator queues Fibre Channel frame traffic through the port or UPM card and sets attached devices offline.

Note: At the start of the loopback test, the port or UPM card can be online, offline, blocked, or unblocked.

2. At the **HA-Fabric Manager** server, open the *HA-Fabric Manager* application. The **Product View** displays.

3. Double-click the icon representing the director for which the loopback test will be performed. The **Hardware View** for the selected director displays.

4. At the **Hardware View**, verify the location of the port or UPM card to be tested. When the mouse cursor is passed over a graphical UPM card on the front view of the director, the card highlights with a blue border and a pop-up displays with the following information:

— Port card type (UPM).

— Chassis slot number (**0** through **15** inclusive for the Director 2/64; **0** through **35** inclusive (excluding **32**) for the Director 2/140).

— The four consecutive port numbers on the selected card. Valid port numbers are in the range of **0** through **63** inclusive for the Director 2/64. Valid port numbers are in the range of **0** through **143** inclusive (excluding **128** through **131**) for the Director 2/140.

5. Reset each port to be tested:

    a. At the **Hardware View**, double-click the UPM card for which ports are to be tested. The **Port Card View** displays.

    b. At the **Port Card View**, right-click the tested port. A menu displays.

    c. Choose **Reset Port**. A `Reset Port n` message box displays, where `n` is the port number.

    d. Click **OK**. The port resets.

    e. Click **Back To Full View** to return to the **Hardware View**.

6. Disconnect the fiber optic jumper cable from the port to be tested. If a UPM card will be tested, disconnect all four fiber optic jumper cables.

Note: If name server zoning is implemented by port number, ensure fiber optic cables that are disconnected to perform the loopback test are reconnected properly. A cable configuration change disrupts zone operation and may incorrectly include or exclude a device from a zone.

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7. If the port to be tested is shortwave laser, insert a multimode loopback plug into the port receptacle. If the port to be tested is longwave laser, insert a single mode loopback plug into the port receptacle. If an entire UPM card will be tested, insert an appropriate loopback plug in all four port receptacles.

8. Choose **Port Diagnostics** from the **Maintenance** menu. The **Port Diagnostics** dialog box displays, as shown in Figure 8.
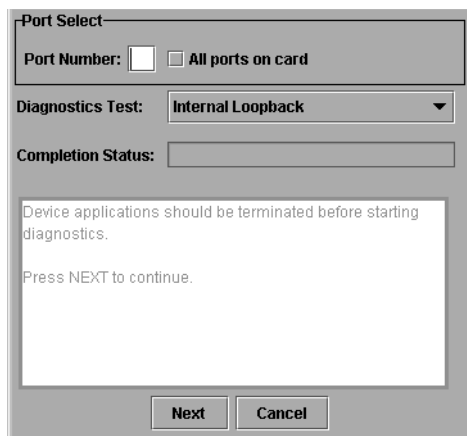
Figure 8: Port Diagnostics dialog box

9. Select a port or UPM card for test, perform one of the following:

   — To select an individual port for test, type the port number in the **Port Number** field.

   — To select a UPM card for test, type the port number of any of the four ports an the card in the **Port Number** field, then choose **All Ports On Card**.

10. At the **Diagnostics Test** list box, choose **External Loopback**.

11. Click **Next**. Beaconing initiates for the port or UPM card selected for test.

    At the **Hardware View**, a yellow triangle displays at the top of the UPM card. At the **Port Diagnostics** dialog box, the following message displays:

    ```
    Loopback plug(s) must be installed on ports being diagnosed.
    ```

12. Verify loopback plug(s) are installed and click **Next**. The following message displays:

    ```
    Verify selected ports are beaconing.
    ```

13. Verify beaconing is enabled, then click **Next**. The following message displays:

    ```
    Press START TEST to begin diagnostics.
    ```

    The **Next** button changes to **Start Test**.

14. Click **Start Test**. The test begins and:

    — The **Start Test** button changes to **Stop Test**.

— The message `Port xx: TEST RUNNING` displays, where `xx` is the port number. If a UPM card is tested, the message displays for all four ports.

— A red progress bar (indicating percent completion) travels from left to right across the **Completion Status** field.

As an individual port is tested, the amber LED flashes (beacons) and the green LED illuminates (indicating loopback traffic through the port).

Note: Click **Stop Test** at any time to abort the loopback test.

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15. When the test completes, test results display (for each port tested) as `Port xx: Passed!` or `Port xx: Failed!` in the message area of the dialog box. If a port fails the test, the amber LED for the port remains illuminated.

16. When finished, click **Cancel** to close the **Port Diagnostics** dialog box and return to the **Hardware View**. Beaconing is disabled for the port or UPM card.

17. Reset each tested port:

    a. At the **Hardware View**, double-click the UPM card for which ports were tested. The **Port Card View** displays.

    b. At the **Port Card View**, right-click the tested port. A menu displays.

    c. Choose **Reset Port**. A `Reset Port n` message box displays, where `n` is the port number.

    d. Click **OK**. The port resets.

18. Remove loopback plug(s) from the tested ports.

19. Reconnect fiber optic jumper cables from devices to tested ports.

Unblocking a UPM Card

To unblock all four ports on a director UPM card:

1. Open the *HA-Fabric Manager* application and log in. The **Product View** displays.

2. Double-click the director icon for which the UPM card will be unblocked. The **Hardware View** displays.

3. Double-click the UPM card to be unblocked. The **Port Card View** for the selected card displays.

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4. Move the cursor over the UPM card to be unblocked (but not over an individual port) and right-click the mouse to open a list of menu options.

5. Choose **Unblock All Ports** option. The **Unblock All Ports** dialog box displays, as shown in Figure 9.
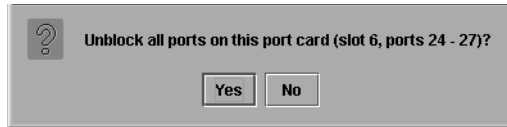

Figure 9: Unblock All Ports dialog box

6. Click **Yes**. The following occurs to indicate the UPM card is unblocked, and the attached devices are online:

   — Emulated green LEDs associated with all four ports illuminate at the **Port Card View**.

   — Green LEDs associated with all four ports illuminate at the director.

7. Click **Back to Full View** to return to the **Hardware View**.

8. Clear the amber system error LED on the director bezel as follows:

   a. Right-click the front panel bezel graphic (away from a FRU) to open a list of menu options.

   b. Choose **Clear System Error Light** option.